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July 31, 2001

Magalie R. Salas, Esq.
Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, DC 20554

Re: CC Docket No. 00-218
In the Matter of Petition of WorldCom, Inc. Pursuant to Section 252(e)(5) of the Telecommunications Act of 1996 for Expedited Preemption of the Jurisdiction of the Virginia State Corporation Commission Regarding Interconnection Disputes with Verizon Virginia, Inc., and for Expedited Arbitration

Re: CC Docket No. 00-251
In the Matter of Petition of AT&T Communications of Virginia, Inc., TCG Virginia, Inc., ACC National Telecom Corp., MediaOne of Virginia and MediaOne Telecommunications of Virginia, Inc. for Arbitration of an Interconnection Agreement With Verizon Virginia, Inc. Pursuant to Section 252(e)(5) of the Telecommunications Act of 1996

Dear Ms. Salas:

On behalf of WorldCom, Inc. and AT&T Communications of Virginia, Inc. and its affiliates listed above, enclosed please find an original and three (3) copies of the testimony and exhibits of Brian F. Pitkin, Richard J. Walsh, Richard B. Lee, Catherine E. Pitts, John I. Hirshleifer, Joseph P. Riolo, Steven E. Turner and Terry L. Murray.

Sincerely yours,

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cc: Service List
Enclosures

Before the
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Washington, D.C. 20554

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CERTIFICATE OF SERVICE

I hereby certify that on this 31st day of July, 2001, a copy of testimony of Brian F. Pitkin, Richard J. Walsh, Richard B. Lee, Catherine E. Pitts, John I. Hirshleifer, Joseph P. Riolo, Steven E. Turner and Terry L. Murray filed on behalf of AT&T and WordCom was sent via hand delivery, Federal Express and/or by email to:

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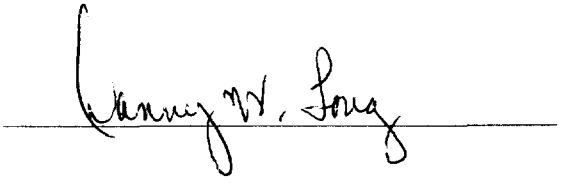

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of Petition of AT&T Communications of Virginia, Inc., Pursuant to Section 252(e)(5) of the Communications Act, for Preemption of the Jurisdiction of the Virginia State Cooperation Commission Regarding Interconnection Disputes with Verizon-Virginia, Inc.	CC Docket No. 00-251
In the Matter of Petition of WorldCom, Inc. Pursuant to Section 252(e)(5) of the Communications Act for Expedited Preemption of the Jurisdiction of the Virginia State Corporation Commission Regarding Interconnection Disputes with Verizon-Virginia, Inc., and for Expedited Arbitration	CC Docket No. 00-218

DIRECT TESTIMONY OF

BRIAN F. PITKIN

ON BEHALF OF

AT&T COMMUNICATIONS OF VIRGINIA, INC.

and

WORLDCOM, INC.

July 31, 2001

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESSES.

A. My name is Brian F. Pitkin. I am a Director in the Financial Services Division of FTI Consulting, Inc., with offices located at 66 Canal Center Plaza, Suite 670, Alexandria, Virginia 22314.

Q. PLEASE DESCRIBE YOUR BACKGROUND.

A. My background, qualifications and experience are described in Exhibit A to this testimony.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The Commission seeks in this proceeding to determine the costs of providing unbundled network elements ("UNEs"). To achieve that objective, I am presenting the FCC's Synthesis Model which, with the adjustments I describe and support herein, provides appropriate estimates of the total element, long-run, incremental costs ("TELRIC") of providing UNEs in Virginia. My testimony relies upon the model runs and documentation provided in *Cost Studies and Supporting Documentation Setting Forth Cost Model Outputs for Unbundled Network Elements and Associated Non-Recurring Charges Submitted by AT&T Communications of Virginia, Inc. and WorldCom, Inc.* ("*AT&T/WorldCom Initial Filing*"), filed in this proceeding on July 2, 2001.

II. THE FCC'S SYNTHESIS MODEL, WITH ADJUSTMENTS, APPROPRIATELY ESTIMATES THE COST OF PROVIDING UNES

Q. WHY ARE YOU PRESENTING THE FCC'S SYNTHESIS MODEL IN THIS PROCEEDING?

A. I believe the Synthesis Model, as modified, reflects the TELRIC costs of providing unbundled network elements more accurately than Verizon's cost model(s). The Synthesis Model reflects the efforts of an objective third party -- the FCC and its Staff -- at estimating the investments and costs of the elements required to provide basic telecommunications services. To date, the FCC has used the model primarily for determining the appropriate level of universal service support. The FCC has acknowledged that certain adjustments are necessary to determine the forward-looking costs of providing individual network elements. I have made the necessary adjustments, and explain them in greater detail below. With them, the model yields results that can be relied upon to establish UNE prices in Virginia.

Q. AS YOU NOTE IN YOUR PRIOR ANSWER, THE FCC DEVELOPED THE SYNTHESIS MODEL FOR USE IN UNIVERSAL SERVICE PROCEEDINGS. WHY DO YOU BELIEVE IT IS APPROPRIATE TO USE IT FOR CALCULATING THE COST OF UNES?

A. It is logical to use the same long-run incremental cost standard for estimating both the cost of UNEs and the size of the Universal Service Fund ("USF"), because doing so eliminates any potential "arbitrage" that might be possible if different approaches were used to calculate costs for UNEs and costs for establishing the USF requirements. The

FCC itself has recognized this logic. In its *First Report and Order on Universal Service*, FCC 97-157; May 8, 1997 at ¶251, the FCC concluded:

> We also encourage a state, to the extent possible and consistent with the above criteria, to use its ongoing proceedings to develop permanent unbundled network element prices as a basis for its universal service cost study. This would reduce duplication and diminish arbitrage opportunities that might arise from inconsistencies between the methodologies for setting unbundled network element prices and for determining universal service support levels. In particular, we wish to avoid situations in which, because of different methodologies used for pricing unbundled network elements and determining universal service support, a carrier could receive support for the provision of universal service that differs from the rate it pays to acquire access to the unbundled network elements needed to provide universal service. Consequently, to prevent differences between the pricing of unbundled network elements and the determination of universal service support, we urge states to coordinate the development of cost studies for the pricing of unbundled network elements and the determination of universal service support.

Furthermore, when the FCC adopted the Synthesis Model within the Tenth Report and Order, language suggests that the FCC contemplated the use of the Synthesis Model for the purpose of both USF and UNEs. Specifically, the FCC discussed the need for UNEs to be statewide or company-specific where the default values are not sufficiently state-specific. Accordingly, as my testimony will discuss, I have made comparable adjustments to the Modified Synthesis Model for this proceeding.[1]

Q. WHY IS THE MODEL CALLED THE "SYNTHESIS MODEL?"

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[1] "State commissions, for example, may find that it is not appropriate to use nationwide values in determining state universal support or prices for unbundled network elements and may choose instead to use statewide or company-specific values." Tenth Report and Order ¶31, fn 66.

A. The term "Synthesis Model" characterizes how the FCC developed the model, *i.e.*, by taking what it concluded to be the best features of three different models. The FCC combined

> elements from each of the three models under consideration [for calculating the costs of basic local service]: (1) the BCPM, Version 3.0 (BCPM); (2) the HAI Model, Version 5.0a (HAI); and (3) the Hybrid Cost Proxy Model, Version 2.5 (HCPM)."[2]

As the above quotation suggests, there are important differences between the FCC's Synthesis Model and a model previously developed by the FCC Staff, the HCPM.[3] The HCPM developed loop investment only. In contrast, the Synthesis Model combines the loop investment values generated by the HCPM with the switching, interoffice and expense modules of the HAI Model, thereby creating a "synthesis" of these two models. In other words, the Synthesis Model "draws on expertise in several disciplines and draws freely from engineering principles displayed in other models."[3] Exhibit B illustrates the origin and development of the FCC's Synthesis Model.

Q. DOES THE SYNTHESIS MODEL CALCULATE "FORWARD-LOOKING" COSTS OF PROVIDING TELEPHONE SERVICE?

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[2] Tenth Report and Order, Federal Communications Commission, CC Docket Nos. 96-45, 97-160, FCC 99-304, October 21, 1999 ("*Inputs Order*").

[3] The FCC Staff's work on the HCPM built upon concepts and algorithms reflected in the HAI Model and the BCPM. In other words, the HCPM itself is a "hybrid" of the HAI Model, the BCPM, and the FCC Staff's own work.

[4] Computer Modeling of the Local Telephone Network, C.A. Bus, D.M. Kennet, J. Prisbrey and W.W. Sharkey, and Vaikunth Gupta, October 199, page 1 ("*HCPM Documentation*").

A. Yes. The Synthesis Model calculates the forward-looking economic costs that an efficient company would incur to provide basic local telephone exchange service. Put another way, prices developed using the Synthesis Model (assuming the appropriate inputs are used) does not reward an incumbent carrier for inefficiencies that may exist in its embedded network. As the FCC has noted, "a forward-looking economic cost methodology creates the incentive for carriers to operate efficiently and tends not to give carriers an incentive to inflate their costs or to refrain from efficient cost-cutting."[4]

Q. WHY DID THE FCC STAFF DEVELOP A NEW LOOP MODULE?

A. The FCC Staff's stated intent in developing a new loop module was to allay concerns about the precision and reliability of earlier loop cost models. First, the FCC Staff sought to develop an alternative distribution design that does not assume customers are evenly distributed within a distribution area. The Synthesis Model accomplishes this objective by first grouping each customer's actual geographic location (*i.e.*, longitude and latitude) into serving areas. Thereafter, the Synthesis Model assigns customers to a distribution grid, typically 360 by 360 feet in size. This information is the basis for the distribution plant calculations.

Second, the FCC Staff wanted to explicitly include cost minimization algorithms in its model. This advantageous feature gives the model the flexibility to estimate forward-looking, efficient costs over time, under different network specifications. The FCC Staff specifically recognized that since:

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[5] Fifth Report and Order, Federal Communications Commission, CC Docket Nos. 96-45, 97-160, FCC 98-279, October 22, 1998 ("*Platform Order*").

> the relative prices of critical inputs, particularly the price of circuit equipment, can be expected to change over time, we believe that the internal optimization routines that are part of the model will make [the Synthesis Model] a far more flexible tool which can be used to re-evaluate forward-looking costs as input prices change.[6]

Section 4 of the *HCPM documentation*, which is included as Attachment B to the *AT&T/WorldCom Initial Filing*, compares the methodologies of the Synthesis Model with the other cost proxy models it had before it at the time.

Q. HOW IS THE SYNTHESIS MODEL ORGANIZED?

A. The Synthesis Model is organized into five different sets of algorithms: (1) clustering, (2) distribution, (3) feeder, (4) switching and interoffice, and (5) expense calculations.

Q. THE LOCAL LOOP IS THE LARGEST COST CATEGORY. HOW DO THE THREE OUTSIDE PLANT ALGORITHMS (CLUSTERING, DISTRIBUTION AND FEEDER) WORK?

A. The *HCPM documentation* describes the clustering, distribution and feeder algorithms of the Synthesis Model. I provide a brief overview of the Synthesis Model's outside plant design below.

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[6] *HCPM Documentation* , page 15 ("").

The clustering process starts with surrogate customer locations.[7] These locations are then grouped into clusters, by wire center, subject to user-defined engineering constraints. This process also generates serving area interface, (or "SAI") locations, the number of customer locations, and lines per customer in each cluster for processing in later algorithms. Next, the Synthesis Model places a grid over each cluster, and then divides the grid into a matrix of microgrids.[5]

The distribution algorithms follow the clustering algorithms. First, the microgrids (determined above) are segmented into customer lots, based on the number of locations within the microgrid. Drop terminals are then placed in the microgrid to serve each customer lot. Finally, the distribution algorithms connect the universe of drop terminal locations to their serving SAIs.

After constructing the distribution plant in each wire center, the Synthesis Model designs the feeder plant. This process connects each cluster's serving SAI with the central office. Once the clustering, distribution and feeder algorithms are complete, the Synthesis Model develops an estimate of the investment required for the local telephone exchange network's local loop.

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[7] While the FCC expressed a preference for geocoded data on customer location – and devised the Synthesis Model to use that data – it elected to use "surrogate" customer location data in its first release because the FCC Staff believed that the geocoded data had not received sufficient public review.

[8] The default microgrid size is 360 feet by 360 feet. However, the number of microgrids are constrained by a 50 by 50 grid matrix. Therefore, the Synthesis Model may use larger microgrids for clusters that exceed 18,000 by 18,000 feet (50 grids * 360 feet = 18,000 feet).

Q. PLEASE DESCRIBE THE REMAINING MODULES THAT COMPRISE THE FCC'S SYNTHESIS MODEL.

A. The remaining sections of the FCC's Synthesis Model include the switching, interoffice and the expense modules. All of these aspects of the Synthesis Model are based on the HAI Model, with a few modifications to incorporate changes to the switching and expense algorithms.

Exhibit C contains a flowchart of the Synthesis Model processing.

III. MODIFICATIONS TO THE SYNTHESIS MODEL

Q. WHAT TYPES OF MODIFICATIONS HAVE YOU MADE TO THE SYNTHESIS MODEL?

A. As noted in the *AT&T/WorldCom Initial Filing*, I have made four types of modifications to the Synthesis Model. First, I have corrected certain implementation errors, including corrections to the model's optimization routines. These changes are described in subsection A of the *AT&T/WorldCom Initial Filing*. Second, I have updated the inputs to the Synthesis Model to reflect current data (the data in the FCC's release of the Synthesis Model are for the year 1998). This process is described in subsection B of the *AT&T/WorldCom Initial Filing*. Third, because the Synthesis Model was designed for estimating the size of the Universal Service Fund ("USF"), I modified it slightly to generate UNE costs. These modifications are described in subsection C of the *AT&T/WorldCom Initial Filing*. Fourth, I substituted certain model inputs to reflect values more appropriate for estimating the cost of UNEs in Virginia. These

modifications, which are set forth in subsection D of the *AT&T/WorldCom Initial Filing*, rely in part on testimony from Messrs. Riolo, Hirshleifer and Lee.

A. Correction of Implementation Errors

Q. CAN YOU DESCRIBE MORE SPECIFICALLY THE MODIFICATIONS YOU HAVE MADE TO THE SYNTHESIS MODEL SOURCE CODE TO CORRECT THE IMPLEMENTATION ERRORS DESCRIBED IN THE *AT&T/WORLDCOM INITIAL FILING*?

A. Included, as Exhibit D to my testimony, is a narrative description of each change that I have made to the Synthesis Model source code along with an explanation of why the modification is necessary. In addition, Attachment C to the *AT&T/WorldCom Initial Filing* is a document identifying each individual change I have made to the Turbo Pascal source code to implement these modifications.

Q. HAVE YOU DISCUSSED THE CHANGES IDENTIFIED WITH THE FCC STAFF?

A. Yes. I met with the FCC Staff on Wednesday, February 16, 2000. Mark Kennet, Jeff Prisbrey and Bill Sharkey, three of the model's original designers, participated in this meeting. All of the modifications I have employed in this proceeding to correct implementation errors were discussed at that meeting, some of which have already been corrected in the FCC's current version of the Synthesis Model.

Q. HAVE YOU SUBMITTED THESE PROPOSED CHANGES IN ANY OTHER JURISDICTION?

A. Yes. I filed these changes in: Docket No. 5825-U, *Universal Access Fund, Transition to Phase II Pursuant to O.C.G.A. § 46-5-167*, before the Georgia Public Service Commission; Case No. 8745, *In the Matter of the Provision of Universal Service to Telecommunications Consumers*, before the Maryland Public Service Commission; and Case No. 8879, *In the Matter of the Investigation into Rates for Unbundled Network Elements Pursuant to the Telecommunications Act of 1996*, and also before the Maryland Public Service Commission.

The Maryland Commission is still considering both of these cases. The Georgia Commission has issued an order in the aforementioned proceeding. Ultimately, the Georgia Commission expressed two concerns with respect to the source code changes I advocated. Specifically, the Georgia Commission indicated that there was insufficient time necessary to review the source code changes and raised concern about maintaining a model separate from the model used by the FCC.[9] The Commission rejected the source code changes for policy reasons and raised no substantive criticisms with respect to these adjustments. Since Verizon has already reviewed these adjustments in the Maryland USF and UNE proceedings[10] and the FCC is currently using a version of the Synthesis Model that has incorporated many of these changes, the parties in this proceeding have ample time necessary to fully evaluate and respond to the changes I have recommended. These facts should allay the concerns raised by the Georgia Commission.

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[9] GA Commission Order in Docket No. 5825-U; December 20, 2000 at 57.

[10] Case No. 8745 and Case No. 8879.

B. Use of Current Data

Q. WHAT MODIFICATIONS HAVE YOU MADE TO INCORPORATE CURRENT DATA?

A. The default version of the Synthesis Model relies upon ARMIS data that is now three years old. I have updated the data for both demand and expenses.

Q. HOW DID YOU DERIVE THE DEMAND INPUTS YOU HAVE USED?

A. The Synthesis Model uses 1998 line counts, call completions and dial equipment minutes ("DEMs"). Verizon-VA has experienced growth in demand over the past several years, and I have updated the inputs to the model for line counts, DEMs and call completions to reflect this growth. Attachment D to the *AT&T/WorldCom Initial Filing* is a summary of current demand characteristics and estimated demand for year-end 2002, which is approximately the mid-point of a three-year period over which I would expect the UNE rates established in this arbitration to remain in effect. I have used annualized growth rates from 1994 to the present to estimate Verizon-VA's demand characteristics in 2002.

Q. PLEASE DESCRIBE THE DERIVATION OF THE EXPENSE INPUTS YOU HAVE USED.

A. The Synthesis Model uses nation-wide ARMIS expense and investment data for 1998 for several calculations. I have replaced this 1998 ARMIS data in the Synthesis Model with Verizon-VA actual ARMIS data for 2000.

Q. HOW HAVE COMMON SUPPORT SERVICES EXPENSES BEEN CAPTURED IN THE SYNTHESIS MODEL?

A. In the standard run of the FCC's Synthesis Model, designed for USF purposes, common support services expenses are developed on a per-line basis. Specifically, the FCC relies upon 1996, 1997 and 1998 data to estimate common support services expenses per line by performing a series of regression analyses for selected ARMIS accounts (6510: Other Property, Plant & Equipment; 6530: Network Operations; 6610: Marketing; 6620: Services Expense & Customer Operations; and 6700: Executive, Planning, General & Administrative). Data points for each regression are the total dollars in the account (dependent variable) and the number of switched lines, special access lines, and toll dial equipment minutes (independent variables) for each of 80 different companies.[11] Under these circumstances, updating the ARMIS data changes the regression coefficients and/or affects the calculation of common support expenses in some other way.

However, I have not employed this approach in my development of UNE costs using the Synthesis Model for two reasons. First, as I explain in more detail below, while the FCC's approach simplifies the calculation of common support expenses applicable to USF, it does not estimate the appropriate common support cost allocation for individual UNEs. Second, the FCC's approach inappropriately assumes that embedded cost data per-line can be used as a proxy for forward-looking common costs. AT&T has undertaken an analysis of the RBOC common overhead ratios (included as Attachment F to the *AT&T/WorldCom Initial Filing*) and, on that basis, I conclude that an eight percent

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[11] The FCC Staff actually divided each of the above data elements by total lines for each company before performing the regression analysis to develop per-line estimates.

mark-up over direct expenses is an appropriate and generous forward-looking assumption.[12] I recommend elimination of the per-line common support expenses calculated by the regression and, instead, substitute the eight percent factor. For this reason, incorporating the more current ARMIS data does not affect my recommended calculation of common overhead expenses.

Q. IF THE COMMISSION CHOOSES NOT TO USE THE EIGHT PERCENT OVERHEAD FACTOR, WHAT OTHER ALTERNATIVES ARE AVAILABLE?

A. If the Commission chooses not to accept the eight percent overhead factor, one option would be to determine a different percentage overhead factor and substitute that figure for the eight percent figure. In the alternative, the Commission could start with the per-line approach to determining common support expenses that is reflected in the FCC's Synthesis Model and make the necessary adjustments to convert the model's USF-oriented output into the UNE-oriented output for use in this proceeding. These changes are described, below, in subsection C. In addition, in order to be forward-looking for Virginia, I would recommend replacing the FCC's nation-wide data (intended to be utilized across all companies for federal USF purposes) with Verizon's Virginia-specific data, and I would recommend using estimated year-end 2002 common support services expense per line.

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[12] In fact, as this table demonstrates, since 1998, Verizon-VA's variable overhead factor has fallen by more than two percentage points, from 9.09 percent to 6.88 percent.

C. Changes Required to The Common Support Calculation In Order to Use the Synthesis Model to Develop UNE Costs

Q. WHAT CHANGES MUST BE MADE TO THE CALCULATION OF COMMON SUPPORT EXPENSES IN THE SYNTHESIS MODEL IN ORDER TO DEVELOP UNE COSTS?

A. Four modifications are required to adapt the FCC's USF-oriented approach to the calculation of UNE costs. First, as noted above, I would rely on Verizon's Virginia-specific expense data rather than a composite of the 80 companies in the FCC's regression.[13] As illustrated in Attachment E to *AT&T/WorldCom's Initial Filing*, the FCC's regression specification estimates Verizon's common support expenses in Virginia (after equivalent adjustments) to equal $464 million per year while Verizon actual 1998 expenses in Virginia were only equal to $382 million. Thus, the FCC's regression methodology overestimates Verizon expenses in Virginia by 21.5 percent ($464 million / $382 million - 1 = 21.5 percent). In addition, Verizon's expenses in Virginia for these accounts have generally declined over the past several years while its demand (in terms of total lines) has been increasing.

In developing TELRIC compliant UNE costs it is appropriate to rely on forward-looking common support service expenses. To be consistent with the estimated demand data, I have forecasted common support service expenses for the year 2002. As Attachment E of *AT&T/WorldCom's Initial Filing* demonstrates, I have relied upon an annualized

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[13] This change is consistent with the FCC's Tenth Report and Order. Within the Universal Service Proceeding, the FCC indicated that "State commissions, for example, may find that it is not appropriate to use nationwide values in determining state universal support or prices for unbundled network elements and may choose instead to use statewide or company-specific values." Tenth Report and Order ¶31, fn 66.

growth rate from 1994-2000 to calculate those expenses for 2002. This is likely to be conservative because Verizon seemingly incurred one-time expenses in 2000 (reversing a three-year trend of falling expenses). One also would expect these expenses to continue to fall in the future, in part because of the recent Bell Atlantic merger with GTE.[14] In Verizon's merger proceedings, the Company indicated that it expected to observe cost savings from this merger.[15] Specifically, Verizon stated "the merger of Bell Atlantic and GTE will produce substantial costs saving and revenue improvements that are hard, real and certain."[16] Furthermore, it implied that such savings would be larger than forecast, citing its experience with the Bell Atlantic/Nynex merger, where expense reductions are said to have been well in excess of those forecast at the time the merger was proposed.[17]

Second, common support services expenses used in USF calculations include retail-related costs that should be *excluded* in calculating TELRIC for UNEs. Therefore, the

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[14] The one-time expenses may be attributable to the merger consolidation of Bell Atlantic and GTE.

[15] See Declaration of Doreen Toben in Support of Bell Atlantic (now Verizon)/GTE Merger at ¶¶ 1-3. In addition, Verizon's Public Interest Statement (at page 22) to the FCC contended that prospective consumer-related benefits would result from this merger. The Companies quoted the FCC Order in SBC-PacTel ¶ 76. "The FCC recognized that a merger of two large, non-competing local exchange carriers can result in savings through the elimination of duplicative operations in wide areas of the companies' business, such as management, customer billing and related services and research and development."

[16] See Declaration of Doreen Toben at ¶ 2.

[17] See Declaration of Doreen Toben at ¶¶ 1-3.

common support expenses associated with marketing and customer service and customer operations expenses must be eliminated from any run of the Synthesis Model.[18]

Third, the Synthesis Model allocates total expenses for common support services to three services, *i.e.*, switched, special access, and toll services. Because USF applies only to switched services, the Synthesis Model ignores the common support expenses allocated to special access and toll services. In UNE proceedings, however, it is appropriate to take into account these common support expenses, because TELRIC focuses on elements that span across a wide range of services.

Fourth, the Synthesis Model's method of applying common support expenses has to be modified. The FCC's Synthesis Model assigns the common support expenses (for switched services only) on a per-line basis, entirely to the NID. Since USF calculations only require the *total* cost per line per month of providing basic local service, this is merely a computational convenience. However, when using the Synthesis Model to develop the costs associated with individual UNEs, a portion of common support services must be allocated to *each* individual UNE. The most straightforward way to accomplish this is to allocate total common support expenses to individual UNEs based on each UNE's proportion of direct costs.

[18] In addition, the executive and planning and general and administrative expenses, to the extent they are applied on a per-line basis, should be reduced to remove any G&A costs associated with providing retail services.

Q. HAVE YOU PROPOSED COSTS USING THE FCC'S PER-LINE APPROACH (WITH APPROPRIATE MODIFICATIONS)?

A. No. As I noted earlier, I have relied upon an eight percent common overhead factor. However, the changes described above would be required if the FCC decided to rely upon the per-line approach in this proceeding. In addition to calculating UNEs with an 8% common overhead factor, the Synthesis Model, as modified according to the discussion above and included as Attachment A of *AT&T/WorldCom's Initial Filing*, can develop UNE costs with the per-line overhead expense. Two minor adjustments must be made in order to use per-line executive and planning and general and administrative expenses:

- Change the "corporate overhead factor" from "8%" to "0%" in cell "C47" of the "Inputs" tab of the expense module, and
- Change the "overhead method" from "Percent" to "Per Line" in cell "D2" of the "PerLine Allocation" tab of the expense module.

Incorporating overhead expenses on a per-line basis increases the estimated loop cost by $0.20, from $5.92 to $6.12. Because I believe it is the appropriate approach, I have relied only upon costs developed using the eight percent factor as the basis for calculating loop rates.

D. Modification of the Synthesis Model Run to Incorporate Certain Input Changes

Q. HOW ARE THE COST MODEL INPUTS TO THE SYNTHESIS MODEL ORGANIZED?

A. The Synthesis Model uses two different sets of user-adjustable inputs, *i.e.*, those relating to the FCC's loop algorithms and those associated with switching, interoffice transport and expenses (*i.e.*, the portions of the Synthesis Model adopted from the HAI Model). As a result, it is generally a straightforward matter to modify the Synthesis Model default inputs. Many of the adjustments described here represent state-specific changes that increase the reliability of the Synthesis Model in the development of costs for UNEs for Virginia. Where appropriate, I have relied upon the standard input assumptions of the Synthesis Model.

Q. WHAT CHANGES HAVE YOU MADE TO THE SYNTHESIS MODEL INPUTS?

A. I have made the modifications outlined below:

- The cluster line fill factor has been increased from 80% to 90% to reflect a more appropriate DLC utilization rate[19];

- The ratio of DS-1 lines-to-business lines has been changed from 12.75% to zero, and the percent of special access lines that are DS-1s has been changed from 91.75% to zero so that the model estimates investment for each line count input into the model (see discussion below);

- The road distance factor has been reduced from 1.0 to 0.9 to help correct for the Original Synthesis Model's use of surrogate customer location data. Without this adjustment, the model exaggerates dispersion and inflates the amount of cable and structure actually required to connect Verizon-VA customers (see discussion below);

[19] *See* Direct Testimony of Joseph P. Riolo (July 31, 2001).

- The structure mix percentages for distribution cable, copper feeder cable and fiber feeder cable were modified to reflect Verizon-VA-specific data[20];

- Feeder structure costs were reduced by 40% to reflect sharing of feeder and distribution facilities[21];

- Structure sharing inputs were changed to reflect more appropriate forward-looking values for Verizon-VA[22];

- DLC inputs relating to line cards, equipment and site preparation costs were modified to reflect more appropriate values for Verizon-VA[23];

- Fiber cable costs were reduced from $3.50 to $1.80 to be consistent with the 24-strand fiber cable cost assumption in the loop portion of the model;

- The additional cost for buried cable has been eliminated because it is already included in the buried cable costs. Therefore, the separate input for buried sheath addition has been reduced from $0.20 to zero;

- Conduit material costs has been increased from $0.60 to $0.72 per foot to be consistent with the loop portion of the model;

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[20] *Id*

[21] *Id.*

[22] *Id.*

[23] *Id.*

- The cost of capital assumptions in the Original Synthesis Model have been modified to reflect the relevant forward-looking risks and capital costs that Verizon is likely to experience in Virginia[24];

- The corporate overhead factor has been adjusted from zero to eight percent as described above;

- The economic lives and net salvage percentages in the Original Synthesis Model have been modified to reflect more realistic forward-looking inputs for Verizon in Virginia[25].

Q. HOW HAVE YOU DEVELOPED COSTS FOR LINES WITH VARYING BANDWIDTH?

A. Digital lines are commonly supplied at several digital signal speeds. For example, a DS-1 line (1.5 MB per second) has the bandwidth equivalent to 24 DS-0 lines (64 KB per second each). How, then, should lines of varying bandwidth be reflected in the cost model?

The Synthesis Model uses DS-0 equivalents, rather than physical line counts, as input. However, I have changed the ratio of DS-1 lines-to-business lines from 12.75 percent to zero and adjusted the percent of special access lines that are DS-1s from 91.75 percent to zero in order to ensure that the DS-0 loop costs determined by the model include the full cable investment required for a physical two-wire loop. In other words, with these

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[24] *See* Direct Testimony of John Hirshleifer.

[25] *See* Direct Testimony of Richard B. Lee.

changes, the model uses the same line counts for calculating investments as is used to calculate the cost per line.

Q. EARLIER, YOU REFERRED TO A REDUCTION IN THE ROAD DISTANCE FACTOR. CAN YOU ELABORATE?

A. Yes. I have, as noted above, adjusted the road distance factor from 1.0 to 0.9. This helps to correct for the fact that the Synthesis Model's use of surrogate customer location data artificially overstates dispersion and inflates the amount of cable and structure actually required to connect Verizon's customers in Virginia. The Kansas Corporation Commission reached this conclusion, and reduced the distribution distance produced by the Synthesis Model by 15% based on Staff's analysis. The Commission provided the following support for the adjustment:

> First, use of road surrogate data rather than geocoded customer location data tends to systematically overestimate the amount of cable 'deployed' by the model, which in turn systematically overestimates the cost of universal service. Second, a comparison of embedded cable quantities to cable quantities produced by application of the model using the road surrogate data shows that cable quantities produced by the model are greater than the quantities in place today. (Order 16: Determining the Kansas-Specific Inputs to the FCC Cost Proxy Model to Establish a Cost-Based Kansas Universal Service Fund, Docket No. 99-GIMT-326-GIT, paras. 38 and 44)

This adjustment is also supported by BellSouth's new cost proxy model ("BLSTM"), which has demonstrated that the Synthesis Model substantially overstates the distribution distance. Specifically, the BLSTM calculates about ½ the distribution route miles (42,851 / 81,660 -1 = -48%) of the default FCC Synthesis Model and 34% fewer route